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Chinchi and Eleanor

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Abstract

I once heard a female animator say that giving birth to her child was easier than making a film. Making an animation is indeed a very long and arduous task. It takes both the craftsmanship of an artist and the skill of a technician. The making of my film, Chinchí and Eleanor, was no different.

It is difficult to explain to the average person exactly how a film is made. Every artist has their own practices, some useful and some just old habits. Animators generally keep to a set of methods that were handed down from the animators before them. My film-making process was similar to the way other films were made, but each experience is unique to the artist. Although computer animation is highly technical the film-making process is still very organic. No two people will share the same path.

Whether a film is successful or not is really hard to say. I obviously wanted my film to be successful but unlike the “fine” arts, much of an animation’s success is determined by the audience. This can be a disconcerting when your only aim is to please the viewer. It was for this reason I mostly just tried to push my skills to the next level. I wanted to perfect some of my old “tried and true” techniques as well as create some innovative methods. The idea was to create a pleasing film for others but even if I for some reason fell short, I knew that at least I would have progressed my skill level in the process. As an artist, that is all one can really hope for.

The Intention

A thesis is supposed to be the culmination of the experiences and skills acquired during one's time at an institution. It should be an impressive and well thought out piece that is both progressive and unique to the individual. For me, as an animation student pursuing an MFA, this means creating an independent film that displays my abilities as a technical artist and craftsman of moving the image. The film may be anything imaginable but must uphold the highest quality and ability of the artist.

I have always wanted to be an animator. Since I can remember I was doodling characters from all my favorite Saturday morning cartoons. Teenage Mutant Ninja Turtles, G.I. Joe, and The X-Men were some of my favorites growing up. Although these shows planted the seed on interest in the first place, it was skill of the Disney and Warner Brothers animators that truly awed me. I watched Dumbo and truly cared about the protagonist. This amazed me, that I truly felt empathy for this set of animated drawings. Whenever I saw Daffy Duck go off into a rant, I not only laughed, but was captivated by the motions. These were the things I wanted to instill into my films.

For my thesis I chose to create a fictional piece in the style of the cartoons I grew up with as a child. Instead of hand-drawn traditional animation my work would be completed utilizing computer generated 3-D animation. The story would be fabricated but founded on some non-fiction. I decided to base my tale on my chinchillas. Eleanor, my female chinchilla is introduced to my male chinchilla Chinchy as his new room-"mate." I felt their real-life forced romance, would elicit some good gags. I wanted to create a fun comical story with pleasing visuals.

Even the best told stories could lose the audience's interest if the visuals are boring or uninteresting. My film was to look very cartoony but maintain believable caliber appearance. The characters would be simplified in color and complexity, while the background elements would be more polished. I would attempt to create the highest quality images using techniques similar to those used by big production houses. The actual movement of the characters would be somewhat a mixed between big squash and stretched moments and subtle acting. This way the gags would read well and the acting would hopefully induce some empathy.

When the thesis was completed I hoped to achieve two goals; create the highest quality film I could and have some excellent portfolio pieces. If I succeeded in the former the latter would result. An artist is always striving to do better; be it quality, concept, or skill; he/she is always attempting to improve. In my case I wanted to put a little more effort in every facet of production. The storyboards and animatic were clearer and better drawn. The character, set design, and artistic direction were more tied down. The character rigs were far more advanced, resulting in better animation. From modeling, to texturing, to lighting and rendering, every level of construction was upped a notch from what I had previously done. Everything was pushed to the brink of the best of my abilities.

The Process (preproduction)

Story is the heart of any film, or at least any good one. Coming up with an idea for any art piece is one of the hardest obstacles to overcome. In animation it is particularly difficult because you are going to have to live with it for a long time. The idea needs to be simple but inspire you to keep working. It has to be funny but have some sort of mainstay with the viewer. More than

anything else it has to be something uniquely yours. There was a photographer that was asked where she comes up with her ideas for her photographs. She simply put, "I shoot what I know." This always stuck with me. It is hard to come up with good narratives but if you look around you can see them everywhere. My intention was to create a fictional story but usually some sort of real life "trigger" will become my underlying theme or spark my imagination. In this case it was my pair of chinchillas.

My chinchillas' "love" life made for an interesting plot. During sophomore year, while pursuing my B.F.A. from Edinboro University, I purchased a male chinchilla, which sort of looks like a mix of rabbit and mouse, for my girlfriend. Though it was not very creative his name became Chinchi. Years went by and eventually my girlfriend became my wife. I thought my pet deserve a mate as well. My wife and I went to the pet store, purchased a female chinchilla, and brought her home to present to Chinchi. One would think he would be overjoyed for the company in his cage and better yet a female! This was not the case. In fact he was entirely annoyed and disgusted by her. Eleanor, her eventual name, was not a particularly attractive looking chinchilla and was a little overweight. Eventually he grew to like her and they did become mates. During this whole process it occurred to me how funny it was that he was stuck with whatever was given to him. He had no choice at all. The cage was perfect metaphor for marriage as well. Just as I was dealing with marriage so was Chinchi, but in a more forced manner. I had my story.

The concept was simple but the story was not entirely fleshed out. Duane Palyka was my initial thesis advisor. With his help a series of treatments were written, each improving on the next.

The intent was to try and get the core ideas in the film as condensed as possible while creating humorous situations. Once the final draft was completed, the rough thumbnails were drawn up. Traditionally, a script is written, but in animation storyboards are created to further develop the story. Sticky notes were used to draw small simple and fast roughs. Using the sticky notes allows shots to be simply moved, replaced, or taken out entirely to find the best possible sequences. This works particularly well for gag development because it allows you to replace gag ideas as new and better ones evolve. A lot of time was spent simply redrawing out each sequence to see if a better solution existed. These were very rough boards so a more precise and eloquent animatic would be needed before any sort of actual production could begin.

A well-drawn carefully planned animatic can save a production from headaches down the road. The story-reel from Pixar's "The Incredibles" utilized a 2.5-D approach with most of the basic posing drawn out. With only a little inbetweening the animatic could easily be mistaken for a completed film. I did not want to create anything quite to that extent but I did want to create an impressive story-reel that the naïve viewer could understand. This way I could allow some previewing to people who were not film students or professors to watch and make sure everything was readable. I decided to create the background elements in Autodesk Maya, draw out the characters by hand, and composite them together.

Usually character and set design develops during the storyboarding process. The characters were tightened up shot by shot as I redrew each sequence. Before I went on to the animatic I created a sharp turnaround sketch of orthographic views. For the sets I rendered shaded pencil

drawings with clear areas of interest. I would use these drawings later as reference to model the characters and assets in Maya.

I quickly box-modeled the set and assets. Not as much care was taken on the background at this point; I was just looking for a simple layout to place my drawings over. Once all of the elements needed were modeled I created a “toon” shader using ramps and normal angle algorithms. Then cameras were created and placed according to the storyboard. After, single shots from each camera were rendered and printed on animation paper. All of the key poses for the animatic were drawn in a traditional Disney style then scanned in and colored in grays. Afterwards the images were composited together. Lastly, I added my music track which my brother, Jacob, provided.

The final look of the animatic was simple and defined. The shots flowed well and the story was clear. The film as a story was shaping up quite nicely.

The Process (production)

Modeling

The first phase of the CG animation production involved creating the 3D models. Layout models were designed initially to get a sense of scale and to maintain consistency. This helped when creating the animatic and planning camera shots. Once every object had a rough layout mesh, I began modeling the environment.

Polygons are my preferred method of modeling. All elements of the film would be modeled utilizing polygonal shells including the background. For the non-organic geometry of the set I

used the common box-modeling technique. This simple approach works much the same as a clay sculptor. You start with broad angular shapes and then work in areas to refine details. This is very desirable when working with multiple objects. The set needed to look good as a whole and this way I could model everything together and see how it fits.

I broke down the set modeling into three sections; extra assets the characters interacted with, the human living room, and Chinchí's cage. Each of these would be handled slightly differently. The props with which the actors interact, needed to contain some sort of rigging to allow them to be cross parented between the character and the world space. Some other assets also needed to deform. For these reasons; and because they would take up a decent amount of frame when interacted with, these objects were given special attention when deciding their topology and amount of polygonal resolution. The living room area, in which the cage resided, was given the least attention. This area merely acted as an extreme background element as simply existed as a "shell" to hold the cage. Few polygons were used to model these objects since they would never be in the foreground. The cage was given the most attention.

The cage and items inside would be constantly in the foreground or hold a special significance so they needed to be done well enough to be readily identifiable. A lot of time was invested in making sure the props looked like the real thing with a slight "cartoony" style to them. Since most of these things existed in real life and were relatively small I was able to handle them while modeling. Things like thimbles, dominos, and matches were modeled from objects right on top of my desk. Other objects like the cage, television, and couch were inside my apartment as well. This made for a great modeling experience. When I completed the models most had a

fair amount of polygons and maintained even quads where possible. This ensures proper texturing and thus, rendering. Creating 3D models based on real world objects that were readily available resulted in some nice finished pieces.

Character modeling is handled very differently from set modeling. There is much more of a concentration on edge loops and manifold geometry. There is not a lot of room for mistakes or bad design. I spent a very long time designing Chinchy and Eleanor in 3D. I used a variety of processes when modeling them. I took my cleaned up turnaround sketch and scanned it into the computer. Then I placed the drawing into Maya for reference. For the bodies I started off with NURBS cylinder primitives. NURBS are inherently organic and make a great starting spot for arms, legs, and torso. NURBS also work nicely as a way of roughly forming the shapes to get an idea of what the character looks like in 3D space. While modeling with NURBS I use as few spans as possible so that the form maintains a fluid organic look. Once the individual pieces look desirable, I will convert them to polygonal meshes and will further refine them from there, adding extra details. All of the body parts at this point are separate pieces so I will combine their meshes and refine the edge-loops. The heads are modeled in a different way. A flat polygonal plane is drawn following the silhouette of the character's side view. Then edges are extruded outwards into circular areas to define the eye sockets, and mouth. From there edges are extruded to follow the cross contour of the head to form a sort of helmet. Finally everything is bridged together and refined until the desirable form is found. This is a very time consuming process but is necessary in order to ensure proper deformation down the road. Once all the models are complete the UV layout and texturing can begin

Texturing

Without any textures the models would not even be visible during render time. Most of the final look actually comes from the textures that are placed on the models. I was not going for anything strikingly different or original. I wanted to create something that was simple and pleasing to look at. The characters would be mostly flat shade while the sets would contain some more detail.

I placed general solid colors on all the polygonal objects in the scene first. Instead of creating a color scheme for the entire set I decided to create analogous color schemes for each individual room of Chinchí's cage. The bedroom used splashes of red, brown, purple; the kitchen used a variety of cool whites; the kitchen used mostly yellow to greens; and the living room used deep red to yellow-orange. As a whole I avoided the blue range of colors to ensure some sort of connectivity between the "rooms" of the cage. After general colors were placed hand-made textures were created.

Photos were taken of the actual objects and then manipulated using Adobe Photoshop. Since most of the 3D assets were based on items I had at home this was very successful. Color, bump, eccentricity, and transparency maps were developed from various photos and placed on the each of the models.

Rigging

In order to have any sort of motion a model must be rigged first. Rigging can be quite confusing if you don't know exactly what you are doing. I knew I wanted my characters to be capable of both subtle acting and sweeping motions but was not looking for realistic movement.

A lot of research went into the rigging. I bought multiple books, and a couple of DVD tutorial sets. I read through three books and completed six DVDs worth of tutorials before I began work on my own character rigs. Notes were taken and specific tutorials that seemed particularly useful were pasted onto my computer's hard drive for easy access. I would view these tutorials again as I began rigging my own models.

Joint placement was particularly tricky on these rodents. The chinchillas needed to be both capable of walking on two legs and act, and be able to hop around on all fours. The joints therefore, needed to be positioned somewhere between the actual skeleton and what was necessary for proper deformation. I had books on animal anatomy but none on chinchillas in particular. Instead I used rat anatomy as reference as well as some web research. I used my knowledge of rigging cartoony characters from before, to inform my decisions on the final layout of the joints.

When base skeleton was laid out, other joints were placed to help with deformation and add control to the character. Complimenting IK and FK joint chains were placed on top of the existing binding joints. Stretchy ribbons were attached in-between the arm and leg joints, and on the spine. These would allow the animator to literally pull the mesh off of the skeleton to create any possible shape. Dynamic spline IK joint chains were added to the ears and tail of the character to obtain some "free" follow-through animation before render time. The stomach

also contained a dynamic solution, utilizing the jiggle deformer to create a little wiggling.

Special joints were positioned on the characters' stomachs, sides, scapulas, and face to create further flexibility.

Traditionally blendshapes are created from facial expressions as well as for posed space deformations. Blendshapes do what the name suggests; it blends a mesh into a target shape. PSDs are basically blendshape fixes that "kick in" during certain poses to ensure the character does not look malformed. First I created the facial blendshapes that would allow for consistent and expected facial expressions. These allow for ultimate control because you make the mesh exactly how you want it to look for certain poses. The downside is that you are stuck with whatever shapes you had made previous and that you cannot create "wild" or "extreme" poses easily. PSDs were developed for specific movement that created undesirable results. For instance, when Chinchu pushed his leg back the gluteus area would collapse and shrink to half its size. I created a blendshape that would make the butt maintain its volume under extreme conditions. I also created some PSDs to enhance other features. An example of this is when Eleanor's arm is pushed back a blendshape will be triggered to make a bulge as though the scapula was moving. The blendshapes worked well but I wanted a little extra control in case I needed a pose I had not pre-made.

Clusters are controllers that will translate vertices when they are moved. Plenty of these were created to ride "on top" of the skeleton and blendshapes. This means that when the skeleton or blendshapes were manipulated that the clusters would follow the mesh. This way I could start off by animating the skeleton, then use the blendshapes, and if I needed a little more

“push” I could utilize the clusters. This gave the character both the consistent and reliable behavior of traditional joint and blendshapes, while allowing for spontaneous manipulation for more extreme poses.

Lots of old “tried and true” techniques, as well as some innovative ones were utilized to create the final character rigs. The result was a pretty robust actor with endless possibilities. For animation purposes these were perfect for a short cartoony film.

Animation

The actual animation of Chinchy and Eleanor was both enjoyable and frustrating. It is wonderful to see the characters come to life but the process was disappointingly slow. Transferring my hand-drawn animatic into a 3D film was a lot of work.

Some animators will work on shots individually all the way to completion. I have seen a lot of independent short films with varying qualities of animation throughout. I wanted to avoid this. Instead I decided to work through all the shots concurrently. This way all the shots would be developed the same amount and would progress as I progressed.

First I made a general layout of the entire scenes. I referenced all the characters and props into one file that I would animate in. Then I placed cameras in their proper places. Cameras were named after their scene, shot, and frame number; for example the first camera was named “sc01_sh01_01_97.” This was great for keeping track of all the cameras during render time.

After the cameras were setup I placed the characters in frame with one general pose for each shot. I playblast (a rough rendering) all the shots and placed them together to get a quick preview of the flow of shots.

When layout was done more rough stepped-tangents were placed across all the shots. Taking influence from the animatic more basic gestures were completed. Again I would playblast all the shots and composite them together to view as a whole. With that information I would again go through make any adjustments necessary and place key in-betweens. Then I would view the playblasts again and then create more keys. This is how the entire animation process was done for the film. At the end there was definitely a consistency between all the shots and the characters were well developed.

Lighting and Rendering

Consistency in lighting and rendering is even more important than in animation. A light rig was developed and imported into each scene file. This helped insure cohesiveness. I also created an excel sheet with all the scene and shots written down with frame numbers. A brief description was written next to each shot so I would know what was happening in each. I made columns as well to identify what render passes were completed. This very organized way of working was quite successful. An overall mental ray pass was rendered first. This had ray-traced shadows, as well as global illumination and caustics. Then a software render of just the characters were completed. These would be used to soften the shadows on the characters from the mental ray. An alpha pass was completed to be composited with the software renders to mask out anything in front of the characters. The last pass to be rendered was the depth

pass. This was used to create an aerial perspective with blur and color intensity. Everything was composited and exported from Adobe After Effects. The final output was similar to what I had envisioned.

Reaction

It is almost impossible to predict how an audience will respond to your work. I was nervous before the screening. Most of the gags and jokes I once thought were hysterical had now entirely lost their spontaneity. I grew tired of looking at my characters and sets. To me they looked stale and lifeless. The soundtrack sounded repetitive and dull. There was little that was fresh to me anymore and I had become numb to my own film.

When my film was screened the response was generally positive. Most of the jokes were laughed at, and the tender parts “awed.” It seemed the audience followed the story and believed in the characters.

A large crowd's reaction can tell you a lot about how your film is working but the critical responses are probably more helpful. After the showing I had critiques on pace, timing, animation, anticipation, and music. These were all valid points. Often an animation's beats are entirely determined by the score. This is what happened in the case of my film and it constricted what I was able to do. For my next film I will find a more professional composer that can work with my own timing.

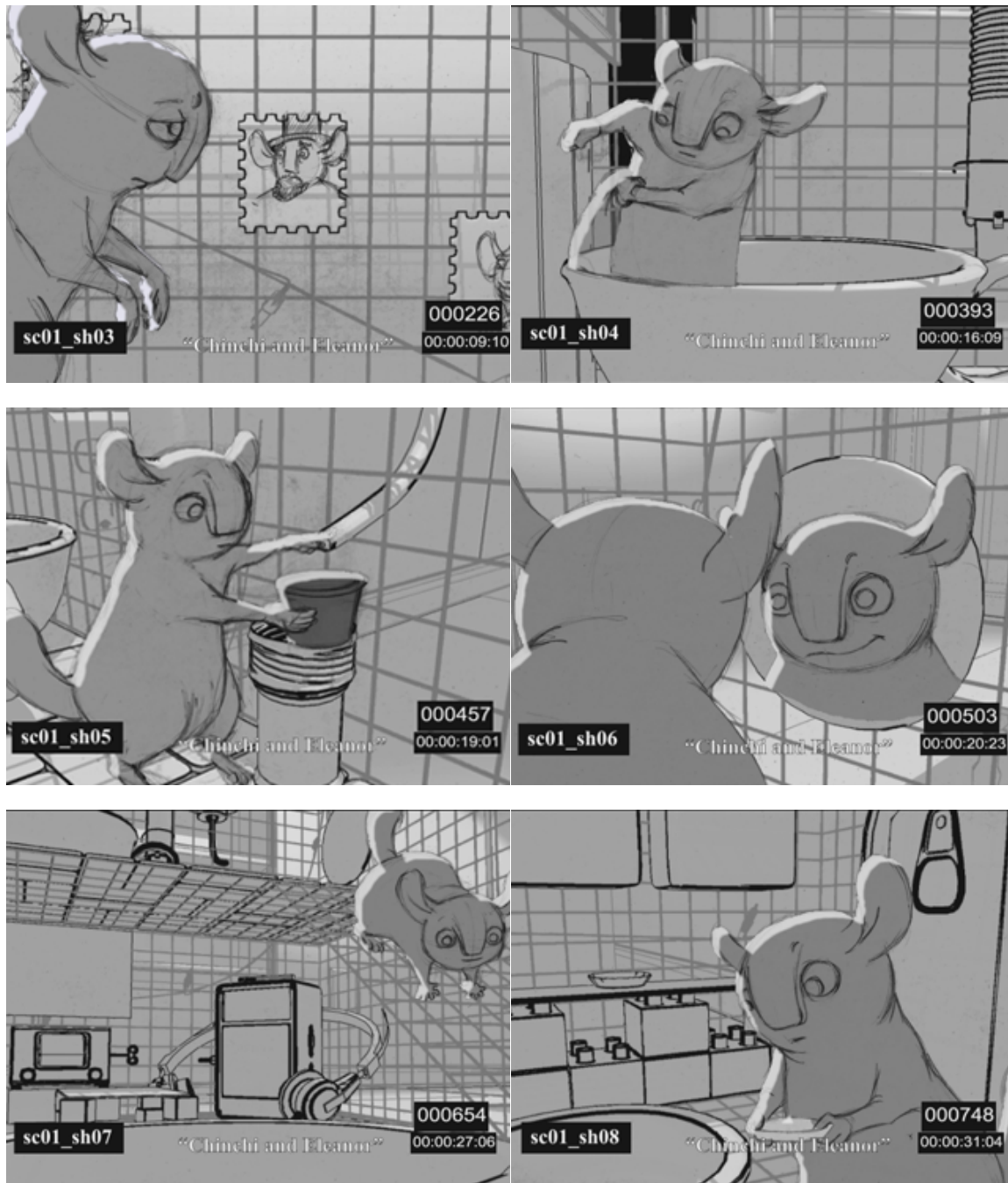
Reflection

Making a film is one of the most time-consuming, arduous tasks, any individual can endeavor. I set out to create the best film I thought I was capable of. In some ways I feel this is true, in others not so much. One of the problems with producing a short is it takes so long. A drawing can take an hour to produce, a painting a week maybe. There is instant gratification, and at that moment it was the best the artist had ever done. A film takes years.

Every time I completed one step of my film I was pleased with my results. By the time I finished the next step I would realize that what I once thought was perfection is now dated and stale. It is a unique problem when working in animation. An artist is always progressing, outdoing previous attempts, but much of the work stays with you throughout the entire production. You want to go back and fix your “mistakes” but you must dredge on. You could tinker forever on just one phase of production if allowed. I suppose to be a true artist you must never be happy with your results. You must keep looking forward towards innovation.

Some aspects of my film were successful. I still enjoy some of the gags and the presentation was definitely better than I had ever done before. I had brought up my skill set one notch, as I always try to do during every job. My models had much better geometry than previous attempts. My texture work was more realistic and artistic at the same time. My rigs were production quality. The animation was better than my previous films. Every phase was taken into consideration with as much energy as I could muster. I did the best I could do at the time that I did it and now I am a better artist than I was before.

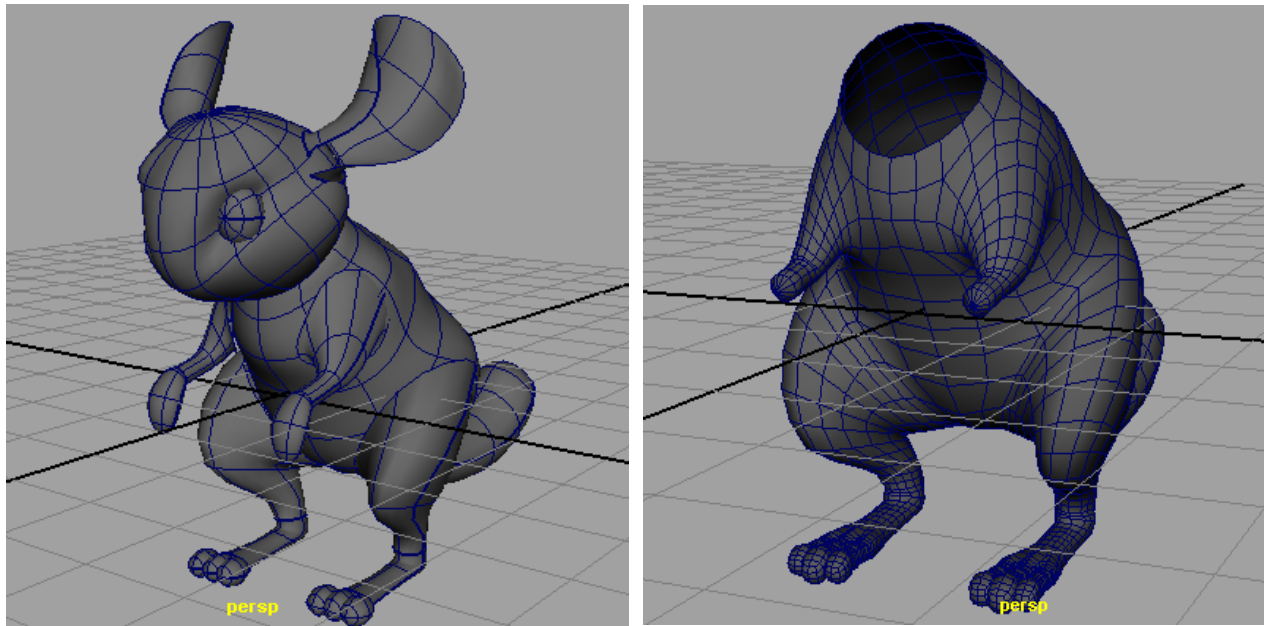
I look forward to the future. I want to continue my growth at a commercial studio. I feel that I have created some nice pieces for my demo-reel that will hopefully make me desirable to any of the companies I have particular interest in. I was recently employed by Fisher-Price for a contract position. I developed character rigs, animated, and helped light, render, and composite finished shots. It was a great learning experience for me as well. I hope between my work there and my completed thesis film that I can enjoy many more productions.



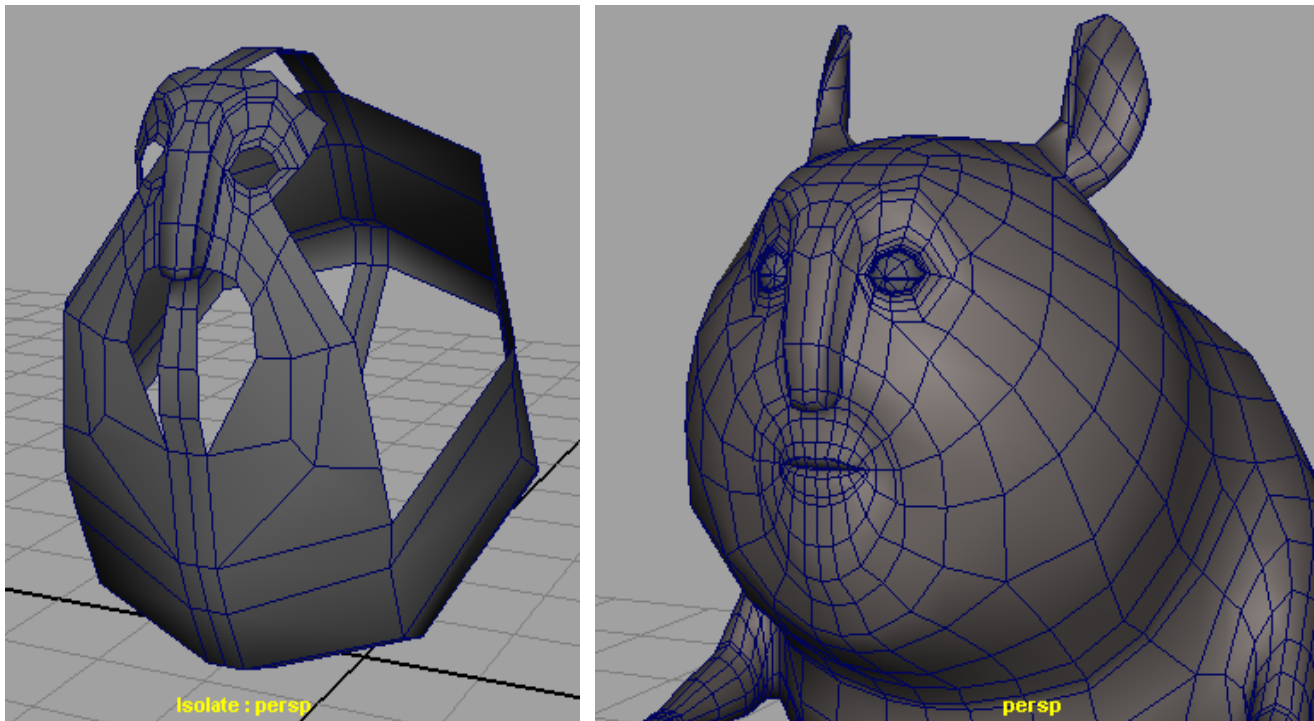
Example of animatic

| Scene | Shot | Start | End | Length | Description | Color (lights) |
|---------|---------|-------|------|--------|-------------------------------|----------------|
| Scene 1 | Shot 1 | 0 | 96 | 97 | fade in on cage | Yellow |
| | shot 2 | 97 | 208 | 112 | close up Chinch in bed | |
| | Shot 3 | 209 | 271 | 63 | Chinchi walking downstairs | |
| | Shot 4 | 272 | 410 | 139 | Chinchi taking a bath | |
| | Shot 5 | 411 | 487 | 77 | Chinchi drinking water | |
| | Shot 6 | 488 | 628 | 141 | Chinchi looking in mirror | |
| | Shot 7 | 629 | 690 | 62 | Chinchi running downstairs | |
| | Shot 8 | 691 | 803 | 113 | Chinchi getting food | Light Blue |
| | Shot 9 | 804 | 898 | 95 | Chinchi sitting on couch | |
| | Shot 10 | 899 | 956 | 58 | TV screen | |
| | Shot 11 | 957 | 1045 | 89 | Chinchi eating | Light Purple |
| | Shot 12 | 1046 | 1131 | 86 | Eleanor in doorway | |
| | Shot 13 | 1132 | 1177 | 46 | Chinchi jumps off couch | |
| | Shot 14 | 1178 | 1369 | 192 | Chinchi points to the exit | |
| | Shot 15 | 1370 | 1576 | 207 | Picture taken | |
| | Shot 16 | 1577 | 1614 | 38 | Close up on picture | |
| | Shot 17 | 1615 | 1676 | 62 | Chinchi passes out | |
| Scene 2 | Shot 1 | 1677 | 2130 | 454 | Chinchi wakes up to Eleanor | Purple |
| | Shot 2 | 2131 | 2455 | 325 | Chinchi and Eleanor in bath | |
| | Shot 3 | 2456 | 2558 | 103 | Chinchi knocks himself out | |
| | Shot 4 | 2559 | 2725 | 167 | Chinchi hides behind dish | |
| | Shot 5 | 2726 | 2885 | 160 | Eleanor pops out of sardines | Light Green |
| | Shot 6 | 2886 | 2956 | 71 | Chinchi is startled | |
| | Shot 7 | 2957 | 3101 | 145 | Chinchi runs to couch | |
| | Shot 8 | 3102 | 3246 | 145 | Tv has pictures of Eleanor | |
| | Shot 9 | 3247 | 3352 | 106 | Chinchi looks over | |
| Scene 3 | Shot 1 | 3353 | 3455 | 103 | Eleanor makes a drawing | Light Green |
| | Shot 2 | 3456 | 3487 | 32 | Close up of drawing | |
| | Shot 3 | 3488 | 3547 | 60 | Chinchi gives back drawing | |
| | Shot 4 | 3548 | 3598 | 51 | Chinchi Jumps away | |
| | Shot 5 | 3599 | 3657 | 59 | Chinchi is now on third level | |
| | Shot 6 | 3658 | 3701 | 44 | Close up of Eleanor Jumping | |
| | Shot 7 | 3702 | 3805 | 104 | Eleanor wiggles 'card' table | |
| | Shot 8 | 3806 | 3819 | 14 | Dice flies | Orange |
| | Shot 9 | 3820 | 3835 | 16 | Dice flies | |
| | Shot 10 | 3836 | 3852 | 17 | Dice flies | |
| | Shot 11 | 3853 | 3868 | 16 | Dice flies | |
| | Shot 12 | 3869 | 3946 | 78 | Dice hits Chinchi | Red |
| | Shot 13 | 3947 | 4036 | 90 | Chinchi's throw hits Eleanor | |
| | Shot 14 | 4037 | 4086 | 50 | Eleanor runs to second level | |
| | Shot 15 | 4087 | 4124 | 38 | Chinchi throws objects | |
| | Shot 16 | 4125 | 4199 | 75 | Eleanor runs through objects | Green |
| | Shot 17 | 4200 | 4236 | 37 | Chinchi looks at bed | |
| | Shot 18 | 4237 | 4310 | 74 | Eleanor turns from bed | Blue |
| | Shot 19 | 4311 | 4351 | 41 | Eleanor continues to run | |
| | Shot 20 | 4352 | 4390 | 39 | Bed rolls into Eleanor | |
| Scene 4 | Shot 1 | 4391 | 4448 | 58 | Chinchi looks sad | Dark Blue |
| | Shot 2 | 4449 | 4560 | 112 | Chinchi carries Eleanor | |
| | Shot 3 | 4561 | 4801 | 241 | Chinchi kisses Eleanor | Yellow |

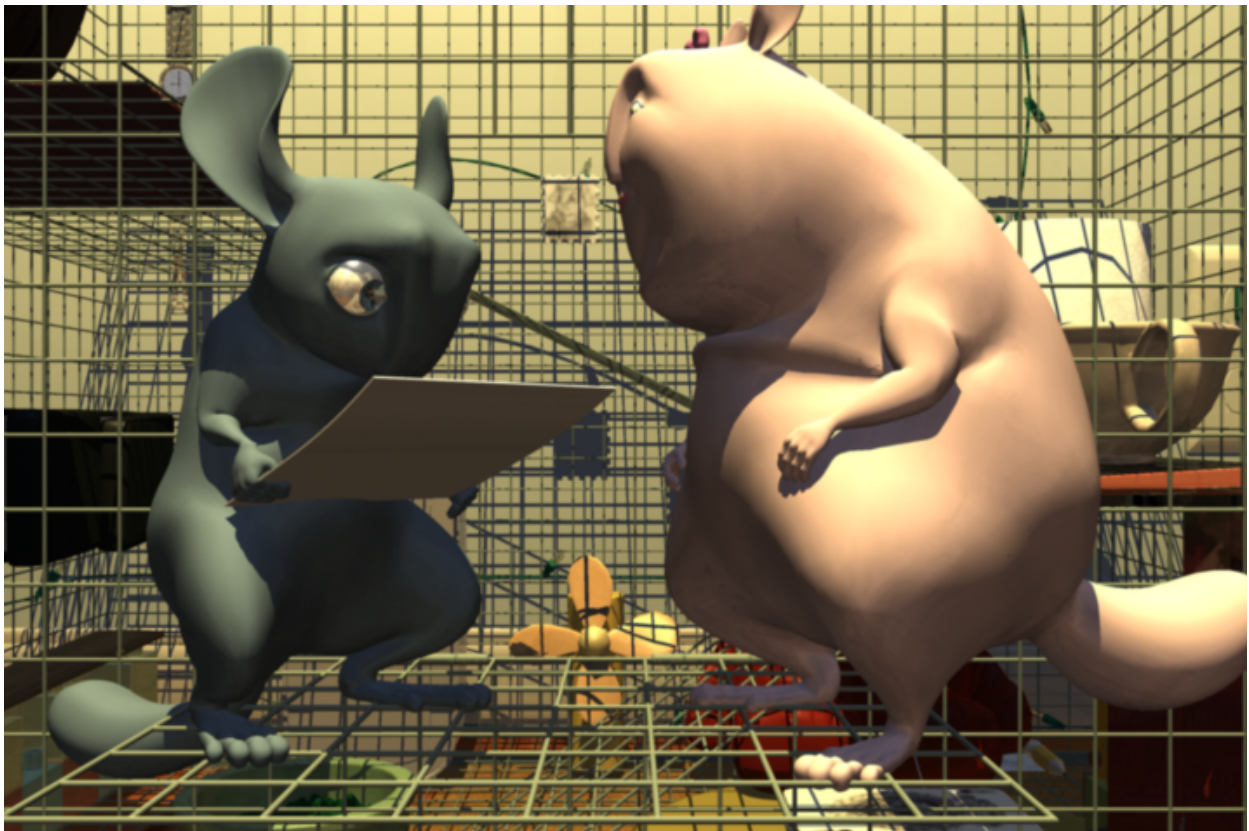
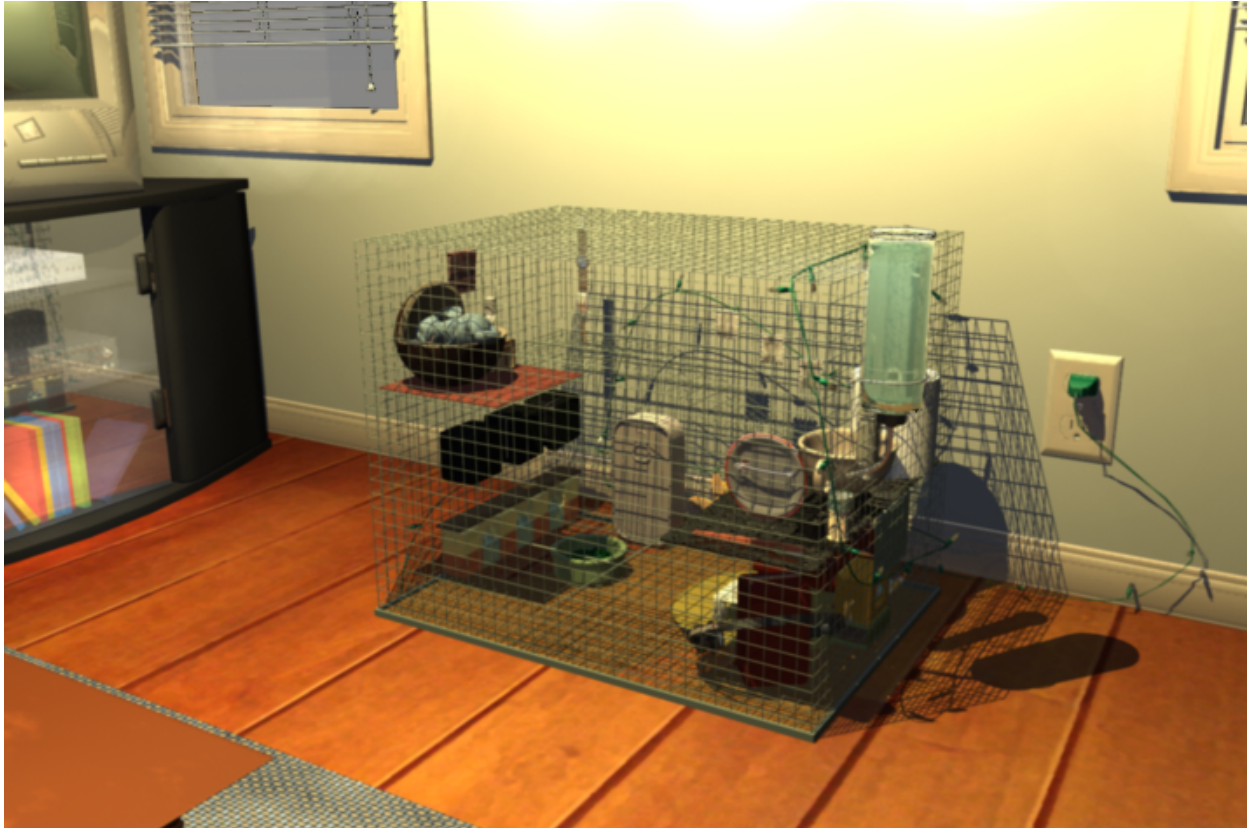
Excel sheet to keep track of shots



NURBS surfaces were designed first then converted into polygons



Edge loops were define on the face first then the rest was developed



Some examples of rendered shots